UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,372	08/29/2003	Enno Adema	03-769	1588

48801 7590 03/03/2010

MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
SUITE 3200
CHICAGO, IL 60606

EXAMINER	
FOSTER, CHRISTINE E	

ART UNIT	PAPER NUMBER
1641	

MAIL DATE	DELIVERY MODE
03/03/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/652,372	ADEMA, ENNO	
	Examiner	Art Unit	
	Christine Foster	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5 and 8-11* is/are pending in the application.

4a) Of the above claim(s) *3 and 5* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 8-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Amendment Entry

1. Applicant's amendment, filed 12/9/2009, is acknowledged and has been entered. Claims 1, 8-9 and 11 were amended. Claims 4 and 6-7 were canceled. Accordingly, claims 1, 3, 5, and 8-11 are pending in the application, with claims 3 and 5 currently withdrawn. Claims 1 and 8-11 are subject to examination below.

Priority

2. The present application was filed on 8/29/2003 and claims foreign priority under 35 U.S.C. 119(a)-(d) to Application No. 102 39 821.6, filed on 8/29/2002 in Germany.

Specification

3. The use of the trademark POLYBRENE has been noted in this application (see, e.g., [0013]). It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks. See MPEP 608.01(v).

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 9 recites that the first reagent R1 comprises "hexadimethrine bromide". In the instant reply, Applicant has advanced evidence (Exhibit A) to show that hexadimethrine bromide is equivalent to POLYBRENE, which was originally disclosed in the specification at [0013]. Therefore, the term "hexadimethrine bromide" does not represent new matter. However, Applicant should amend the specification at [0013] to include this generic term "hexadimethrine bromide", which does not currently appear in the body of the specification.

Specifically, it is suggested that Applicant amend line 6 of paragraph [0013] of the specification to disclose "…heparin antagonists, e.g., POLYBRENE (hexadimethrine bromide)…" in order to obviate both of the objections to the specification.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1 and 8-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

7. Claim 1, as amended in the instant reply, now recites steps of determining the amount of thrombin "not interacting with AT" (see parts (b), (d), and (e) of the claim).

Applicant indicates that support may be found for the noted limitation of "thrombin not interacting with AT" in paragraphs [0008]-[0010] of the specification (Reply, page 5).

The examiner has reviewed the indicated passages but was unable to find support for the claimed methods, in which first and second determinations of thrombin "not interacting with AT" are measured.

In particular, the specification discloses at [0008] that:

> A first determination of the AT binding partner is carried out without AT interaction, i.e., under conditions where AT that is present essentially does not react with the AT binding partner…

Thus, the specification describes how the first measurement of the AT binding partner (in this case, thrombin) is carried out without AT interaction (i.e., thrombin not interacting with AT).

However, the instant claims now require that after this first measurement, reagents R2 and R3 are added and the conditions of the reaction mixture are changed; followed by a second measurement of thrombin "not interacting with AT". See steps (b)-(e) of claim 1.

The specification does not explicitly disclose that the second determination of thrombin involves measuring thrombin "not interacting with AT".

Rather, the specification makes clear at [0007] that "a first determination of the AT binding partner is carried out without AT interaction, **and subsequently a second determination of the AT binding partner is carried out <u>with AT interaction</u>**" (emphasis added). Similarly, part (c) of claim 1 that the third reagent R3 is added "such that thrombin interacts with AT".

See also [0008]:

> Subsequently the conditions are changed such that AT present in the sample can interact with the AT binding partner by, for example, adding a suitable reagent to set up conditions under which the interaction, e.g., complex formation between AT and AT binding partner, is accelerated.
>
> And also at [0010]:
>
> Subsequently the formation of the complex between AT and AT binding partner is accelerated by, for example, activating the AT.

Therefore, the specification discloses that the first measurement is carried out without AT interaction but that the second measurement is carried out with AT interaction; i.e., with the AT binding partner (thrombin) complexed with AT.

For these reasons, support is not apparent for methods in which both measurements are carried out on thrombin "not interacting with AT" as now claimed.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1 and 8-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 1, as amended in the instant reply, now recites step of "conducting a second determination of the amount of thrombin **not interacting with AT**" in part (d) of the claim (emphasis added). However, the preceding step (c) recites adding a third reagent R3 "such that thrombin interacts with AT". The claim is indefinite because it is unclear how thrombin not interacting with AT could be measured, since the claim indicates that thrombin is in fact interacting with AT at this point in the method.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plattner et al. (US 4,219,497) or Philo et al. ("Comparison of antithrombin III assays using biological and chromogenic substrates" Br J Haematol. 1982 Jan;50(1):147-56) in view of Winant et al. (U.S. 5,118,790), Furatu (EP 0 041 366), Morris et al. (US 4,314,987), and Akhavan-Tafti et al. (US 6,068,979).

Plattner et al teach measuring total AT activity by adding excess thrombin (i.e., reagent R1), a chromogenic substrate that is a peptide substrate of thrombin (i.e., second reagent R2), and heparin (i.e., third reagent R3) and determining free (excess) thrombin via hydrolysis of the chromogenic substrate. See column 6, line 28 to column 7, line 4. Heparin is the same third reagent R3 recited instantly (see claim 7) and would therefore necessarily also possess the same functional characteristics claimed, e.g., the ability to promote interaction of thrombin with AT.

The amount of AT and the amount of color produced from the substrate cleavage by thrombin are inversely proportional, such that the level of AT can therefore be readily determined by monitoring the color development of the reaction mixture (column 6, line 66 to column 7, line 4).

Plattner et al. further teach that this test allows one to measure total AT activity as an entity distinct from the "progressive anti-thrombin activity," which is measured in the absence of heparin. See especially at column 6, lines 52-57.

Thus, the reference teaches determining total AT activity (in which case the measurement occurs in the presence of heparin) as well as progressive anti-thrombin activity (in which case the measurement occurs in the absence of heparin). Both of these measurements are performed by detecting thrombin activity on a chromogenic substrate as instantly claimed.

Plattner et al. differs from the claimed invention in that it fails to specifically teach conducting these two measurements in a single reaction mixture. In other words, Plattner et al. teach performing the claimed determination steps *in parallel*, while the instantly claimed invention requires that they be performed *sequentially*, on the same sample or reaction mixture.

In addition, Plattner et al. is silent as to whether the sample may contain one or more pharmaceutical compounds that inhibit thrombin.

Like Plattner et al., Philo et al. similarly teach methods of measuring antithrombin III levels in plasma samples by incubating samples with thrombin (i.e., reagent R1), either with or without heparin (i.e., reagent R3). See the abstract. The methods also employed the colorimetric thrombin substrate S-2238 (i.e., reagent R2). See page 148, “Materials and Methods”. Similar to the methods of Plattner et al., Philo et al. teach two measurements: a first determination of “progressive anti-thrombin" by adding thrombin (i.e., first reagent R1) to plasma samples (see the abstract and page 149, “Progressive antithrombin assays) and determining free thrombin by adding the colorimetric thrombin substrate S-2238 and measuring the resulting absorbance over time (see also at page 148, “Materials and Methods”); and a second determination of "heparin

cofactor" in which heparin is also added to the reaction mixture (pages 149-152, see especially at page 149, "Heparin co-factor assays").

Like Plattner et al., the teachings of Philo et al. also differ from the claimed invention in that the reference performs the above two measurements in *parallel*, using multiple aliquots of the plasma samples (abstract). The reference therefore fails to specifically teach subjecting the same sample to both determinations in *sequence*.

In addition, Philo et al. is silent as to whether the sample may contain one or more pharmaceutical compounds that inhibit thrombin.

Winant et al. teach the thrombin inhibitor hirudin, which is an effective anticoagulant and antithrombolytic agent that may be used in treatment of antithrombin-III deficiency and other conditions (i.e., pharmaceutical compound that inhibits thrombin). See column 1, lines 10-25.

The teachings of Winant et al. establish that antithrombin-III deficiency was a known medical condition that may be treated with the thrombin inhibitor hirudin.

It would have been obvious to one of ordinary skill in the art to use the methods of measuring antithrombin III of Plattner et al. or Philo et al. in order to measure antithrombin III in samples taken from individuals being treated with hirudin for antithrombin-III deficiency. One would be motivated to do this in order to assess or monitor the status of disease, i.e. to determine whether hirudin is effectively treating the antithrombin-III deficiency. Put another way, it would have been obvious to use known methods of measuring antithrombin III (such as those of Plattner et al. or Phil et al.) in a clinical context in order to study diseases associated with alterations in antithrombin III. Because individuals afflicted with antithrombin III deficiency were known to be treated with hirudin, when assessing such individuals it would have been

obvious to arrive at the claimed invention by assessing antithrombin III in samples from such individuals as they would contain this thrombin inhibitor.

With respect to the recitation that thrombin does not initially interact with AT until after addition of third reagent R3, such features are considered to reflect intrinsic physiological properties of the thrombin-antithrombin III-heparin system. As such, when assaying antithrombin III in individuals under treatment with hirudin, it is presumed that added thrombin would initially interact with hirudin prior to heparin addition as claimed.

Regarding the determinations of thrombin twice in single reaction mixture, it was known in the art to subject a single sample to multiple measurements in sequence. For example, Furatu et al. teach subjecting a sample to a plurality of reactions sequentially (see especially pages 1-4). In one embodiment, a reagent solution containing an enzyme is added to a sample solution to cause enzyme reaction, and the result is determined by colorimetric detection (page 3, the first paragraph). Next, a second reagent solution is added to the first reagent solution and a second detection step is performed (page 3, the last paragraph to page 4, first paragraph).

Furatu et al. teach that one advantage in performing a plurality of measurements on a single sample is that only a very small amount of a sample is used, which decreases the sampling number and omits the need for successive sampling operations (page 2).

Morris et al. teach performing a continuous sequence of tests in time on the same blood sample in order to avoid numerous errors that may be introduced by delays in time, differences in blood samples, etc. (column 3, lines 32-53).

Akhavan-Tafti et al. teach that it is frequently desirable to be able to detect and/or quantify more than one analyte at a time in a single test system; savings in time, reagents and

materials can thereby be realized and assay protocols can be simplified (column 1, lines 55-63). The solution proposed by Akhavan-Tafti involves sequential detection (see especially the title and abstract).

Therefore, it would have been obvious to one of ordinary skill in the art to detect thrombin activity in the absence and in the presence of heparin as taught by Plattner et al. or Philo et al. and Winant et al., but to perform these two measurements *sequentially* in the same reaction mixture rather than in parallel. Performing multiple measurements on a single sample was known in the art, as taught for example by Furatu et al., Morris et al., and Akhavan-Tafti et al. Although these references do not relate to determination of AT-III specifically, given that the chemistry of AT-III/thrombin reaction were well established at the time of the invention (as taught for example in Plattner et al. and Philo et al.), it would have been further obvious to perform the measurement of "progressive anti-thrombin activity" in the absence of heparin first, and to then add heparin for determination of total AT-III activity (thereby changing the reaction conditions as recited). Put another way, it would have been obvious to use known techniques to improve upon known methods in which multiple measurements are performed, such as those of Plattner et al. and Philo et al.

One would be motivated to perform the measurements sequentially on a single sample in order to minimize the amount of sample required, in order to save time, reagents, and materials, in order to simplify assay protocols, and/or in order to reduce errors due to delays in time and/or differences in blood samples.

With respect to claim 11, Plattner et al. teach determining thrombin by monitoring color development of the reaction mixture as a function of time, i.e. a kinetic determination (column 6,

line 66 to column 7, line 4; see also at column 5, lines 43-51). Philo et al. similarly teach measuring the absorbance of the mixture over time (page 149).

13. Claims 8-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Plattner et al. or Philo et al. in view of Winant et al., Furatu, Morris et al., and Akhavan-Tafti et al. as applied to claim 1 above, and further in view of Exner (US 6,051,434).

The Plattner et al., Philo et al., Furatu, Morris et al., and Akhavan-Tafti et al. references are as discussed above. Plattner et al. fail to specifically teach that the first reagent R1 also comprises hexadimethrine bromide (Polybrene).

Exner teaches a mixture including Polybrene, in order to reverse the effect of any heparin that may be present in test samples. See column 3, lines 34-37. Plattner et al. and Philo et al. teach how determinations of progressive antithrombin are performed in the absence of heparin.

Therefore, when determining AT according to the prior art methods as discussed above, it would have been further obvious to one of ordinary skill in the art at the time of the invention to include Polybrene, as taught by Exner, in the step of measuring the progressive anti-thrombin activity, in order to control for the effect of any heparin that may be present in test samples.

More particularly, as this measurement step of Plattner et al. and Philo et al. requires determining the activity of anti-thrombin in the absence of heparin, the inclusion of Polybrene would ensure the success of the assay, thereby providing motivation to combine Plattner et al and Exner references. In addition; one of ordinary skill in the art at the time of the invention would have had a reasonable expectation of success in including the Polybrene of Exner in the method of Plattner et al. or Philo et al. Furatu, Morris et al., and Akhavan-Tafti et al., since Plattner et al.

and Philo et al. each teach measurement steps excluding thrombin:AT-III interaction, and the polybrene of Exner is well known in the art as capable of preventing the effect of heparin on inducing thrombin:AT-III complexes.

Response to Arguments

14. Applicant's arguments filed 12/9/2009 have been fully considered.

15. Regarding the objection to the specification for use of the trademark POLYBRENE, Applicant argues that there is no need to capitalize this term because the trademark is no longer active (Reply, page 4). The examiner is unaware of any exceptions on this basis, and therefore requests that Applicant identify the trademark by capitalizing each letter of the mark (or by otherwise indicating the description of the mark) as per MPEP 601.01(v).

16. Applicant's arguments with respect to the rejections under § 112, 1st and 2nd paragraphs have been considered but are moot in view of the new ground(s) of rejection.

17. With respect to the rejections under § 103, Applicant's arguments (Reply, pages 6-8) have been fully considered but are not persuasive.

18. Applicant argues that it was surprising and unexpected that it is possible to conduct two determinations of free thrombin successively in one and the same sample (Reply, page 6). Applicant reasons that one would not have expected this because of the addition of the R3 reagent between the first and second determinations. This is not found persuasive because it was known to conduct multiple determinations on a single sample with intervening addition of reagents, as taught for example by Furatu. As such, the mere fact that the R3 reagent is added between determinations does not constitute sufficient evidence to establish that the ordinary

artisan would have viewed two determinations of free thrombin successively in one and the same sample as unexpected or surprising. There is insufficient evidence of record to adopt the conclusion that this result would be viewed as impossible or unexpected by the ordinary artisan.

19. Applicant further argues that in the present invention, only a single determination of AT is made, based on two measurements of free thrombin in the same sample but under different conditions (Reply, page 6). Applicant argues that the Plattner and Philo references do not teach or suggest measuring thrombin twice under different conditions to determine the amount of AT in the same sample.

Applicant's arguments have been previously advanced and are not persuasive for reasons of record (see the previous Office action at pages 18-20). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, although the primary references do not teach measuring thrombin twice in the same sample, when taken together with the teachings of Furatu et al., Morris et al., and Akhavan-Tafti et al. which establish that it was known to conduct multiple measurements on a single sample, it is maintained that it would have been obvious to perform the multiple thrombin measurements taught by Platter or Philo on a single sample rather than on multiple samples.

Moreover, as the claims employ open transitional language (a method "comprising"), the claims are not limited to a "single determination of AT" as argued.

20. Applicant further argues that these primary references do not suggest that it is possible to determine the amount of AT in a sample when an interfering factor such as a drug is also present. This is not found persuasive because initially, it is noted that the claimed methods employ conditional language in regards to the sample (a sample that "may" contain…compounds that inhibit thrombin). As such, Applicant's arguments are not commensurate with the scope of the claims; the claimed methods need not be performed on samples that actually contain an interfering factor.

Furthermore, it has not been adequately substantiated why one of ordinary skill in the art would lack a reasonable expectation of success in assaying AT in the presence of thrombin inhibitors. What facts were known to the ordinary artisan that would have led to the conclusion that assaying AT under these conditions was impossible? The data presented in the specification would at best support that a *difference* in results may be obtained, but do not indicate that AT determination is not possible at all (see [0023]).

21. Applicant further argues that Plattner does not teach adding a third reagent R3 to change the conditions under which thrombin is measured (paragraph bridging pages 6-7). This is not found persuasive because Plattner teaches the same third reagent R3 (heparin) that is recited instantly, such that it would necessarily possess the same properties. Consequently, when adding heparin in the methods of Plattner (or Philo), Winant et al., Furatu, Morris et al., and Akhavan-Tafti et al., it would necessarily follow that the reaction conditions would also be changed.

22. Applicant further argues that the fact that hirudin was known in the art does not mean that its use in an assay procedure is obvious (Reply, page 7). This is not found persuasive for reasons of record as set forth above. The teachings of Winant et al. establish that AT deficiency was a

known medical condition that may be treated with the thrombin inhibitor hirudin. As such, it would have been obvious to assay AT levels in the context of this known medical condition in patients being treated for their disease, i.e., in samples containing hirudin. For example, when taken together with the general knowledge in the art, it would have been obvious to monitor AT levels in patients with AT deficiency in order to determine whether hirudin treatment was effective in normalizing AT levels. Therefore, Winant et al. is being relied upon for relevant teachings beyond the mere fact that hirudin was known in the prior art.

23. Applicant's arguments that the secondary references do not teach analysis of any single analyte, and in particular not of AT (Reply, page 7) have been previously advanced and are not persuasive for reasons of record (previous Office action, pages 19-20).

24. With respect to the rejections of claims 8-9, Applicant argues that Exner does not describe any instances in which heparin as an active component and Polybrene are both present at the same time. Applicant argues that in Plattner, the step of measuring the progressive anti-thrombin activity is specifically conducted in the presence of heparin, such that it would not be obvious to add an antagonist for a component that is specifically added. See Reply, page 8.

This is not found persuasive because Plattner teaches that progressive anti-thrombin activity is specifically conducted in the *absence* of heparin, and not in its presence as argued by Applicant. See column 6, lines 53-55. Consequently, it is maintained for reasons of record that it would have been obvious to include Polybrene in order to reverse the effect of any heparin that may be present in test samples (as taught by Exner et al.) when determining progressive antithrombin activity in the absence of heparin as directed by Philo and Plattner.

Conclusion

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Foster whose telephone number is (571) 272-8786. The examiner can normally be reached on M-F 6:30-3:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya, can be reached at (571) 272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christine Foster/
Examiner, Art Unit 1641

/Mark L. Shibuya/
Supervisory Patent Examiner, Art Unit 1641